

# THE STORY OF TRILLIUM CREEK PRIMARY SCHOOL







# TRILLIUM CREEK PRIMARY SCHOOL

WEST LINN, OREGON



# How We Got Here...

Based on research related to District-wide primary school enrollment and the recommendations of the West Linn-Wilsonville's Long Range Planning Committee, the 2008 Capital Bond identified and funded the design and construction of Trillium Creek Primary School. A new school planning committee comprised of teachers, administrators, architects and community members surveyed students and engaged in design charrettes to inform the site and building development with diverse and authentic ideas and understandings about best practices in teaching and learning. The final design for building features, floor plans and site connections support the mission and guiding visions of the School District.

The design of Trillium Creek Primary School supports the developmental and learning needs for the K-5 population that it will serve. The design team was inspired by one student who announced during a design charrette, "I want to be the captain of my own learning." That notion was used as a basis to identify features and design techniques that emphasize that the building is student centered and supports District approaches to teaching and learning. Interior spaces are designed intentionally with blurred edges to support collaboration, utilize floor space for transitions and connect students throughout the building to the center of the school and inquiry—the library. Collaborative learning neighborhoods emerge from these open and flexible porches that are central to four or five classroom spaces, and support partnerships and a sense of community between students and teachers. Intentional spaces and furnishings throughout the building provide independent learning spaces and areas for small group work. These features support classroom activities and reading and writing workshop models. Classroom porches, the library and wellness commons give teachers and students the flexible space to extend lessons into larger gathering spaces. These large, multi-use spaces throughout the building are designed with mobile furniture to accommodate a range of activities.

Notions of community, collaboration and teaming drove the use of interior glazing and "see-through" design of the building. Visual connections between teachers and students reinforce the public nature of the work of teaching and learning and invite collaboration and teaming. Splashes of bright colors throughout the interior spaces stem from students voicing desires to have vibrant learning spaces. Similarly, the slide that connects students from the second to first floor balances students' desire to have alternative and stimulating components of the building, with opportunities to build skills around collaboration, mindfulness and respectful use of space.

The colorful oriels that extend the classroom from the building are easily identifiable from the site, building ownership of the school and place for students. Wood furnishings in the library and throughout the school bring components of the natural environment into the building, while the natural colors of the exterior blend the built environment back into its natural setting. Access to the site through doorways and the entry plazas reinforce the connection between students, teachers and the community to the unique features of the site and extend learning into the schoolyard. These direct connections support work that teachers and student have done throughout the District around place-based education and supporting curriculum with meaningful field experiences, inquiry projects and community connections. These building and site features provide opportunities for students, teachers and the larger community to inform the culture of the school and continue to define these spaces within the context of the work that all primary schools in the District are doing around best practices in teaching and learning.





SCHOOL'S LOCATION RELATIVE TO WEST LINN  
AND THE WILLAMETTE RIVER

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DOWA-IBI Group  
Parallel Photography  
Mimi Kamp (Trillium Ovatum sketch)



**DOWA-IBI GROUP**  
915 SW Stark St, Suite 100  
Portland, OR 97205



**HEERY INTERNATIONAL**  
9600 SW Barnes Road, Suite 320  
Portland, OR 97225



**WALKER MACY**  
111 SW Oak St., Suite 200  
Portland, OR 97204



**WEST LINN - WILSONVILLE SCHOOL DISTRICT**  
22210 SW Stafford Road  
Tualatin, OR 97062



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## PROJECT DESIGN TEAM

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ARCHITECTURE: DOWA-IBI Group: Norm Dull, Principal and Karina Ruiz, Associate Principal

CIVIL ENGINEER: Winzler Kelly, a GHD Company

LANDSCAPE ARCHITECTURE: Walker Macy: Ben Vaughn, Associate

STRUCTURAL ENGINEER: Froelich Consulting Engineers

FOOD SERVICE: Halliday & Associates

MEP: PAE Engineers

LOW VOLTAGE/TELECOM: Interface Engineering

ACOUSTICS/ SOUND SYSTEM: Altermatt Associates

TRANSPORTATION: DKS Associates

COMMISSIONING: HEERY

GENERAL CONTRACTOR: Howard S. Wright

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## WEST LINN-WILSONVILLE SCHOOL DISTRICT

Dr. Roger Woehl, Superintendent (retired)

Dr. Thayne Balzer, Assistant Superintendent (retired)

Dr. Jane Stickney, Deputy Superintendent

Dr. Kathy Ludwig, Assistant Superintendent

Dr. Patrick Meigs, Lowrie Primary School

Charlotte Morris, Trillium Creek Primary School

Tim Woodley, Director of Operations

Tony Vandenberg, Project Manager

Bob Teters, Project Manager

Pat McGough, Facilities Manager

Nell Achtmeyer, Sustainability Coordinator

Remo Douglas, Project Manager

Cindy Hepting, Community Service Program

Amy Berger, Bond Administrative Assistant

Nancy Hubbard, Hubbard Associates

Margaret Allen, Town Center School (retired)

Jacquie Banet, Boeckman Creek Primary School

April Brenden-Locke, Boones Ferry Primary School

Travis Burke, Boones Ferry Primary School

Saskia Dresler, ArtTech High School

Jen Freeborn, Stafford Primary School

Eric Gakstatter, Community Member

Allison Gilbert, Rosemont Ridge Middle School

Lisa Hawking, Sunset Primary School

Barbara Miller, Parent

Holly Omlin-Ruback, Bolton Primary School

Jennifer Patterson, Boones Ferry Primary School

David Pryor, Willamette Primary School

Tracy Pyeatt, Parent

Amy Schauer, CREST

Kimberly Steele, Parent

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This book documents the story of the evolution of the Trillium Creek Primary School site, building design process and construction. The design team—in participation with teachers, students, neighbors, and the City of West Linn—strived to develop a school which emphasizes a focus on the site's ecological features and supports a rich culture of teaching and learning. DOWA-IBI Group Architects worked in collaboration with Walker Macy, the landscape architectural consultant, to execute the design. Howard S. Wright was the general contractor on site throughout construction.

This body of work includes a sampling of the programming, schematic design, and design development phases which explored strategies to develop the most effective indoor and outdoor spaces for students, while responding to the programmatic requirements of the West Linn-Wilsonville School District. Drawings illustrate the advancement of design ideas into dynamic, functional spaces that emphasize a sense of place and community.

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TRILLIUM CREEK PRIMARY SCHOOL

# Introduction

The site and building design for Trillium Creek Primary School aim to create a safe, cultivating setting, in a sustainable and responsible manner. The development strives to balance the programmatic needs of the school with the site topography, existing natural areas, and maintainability. The site design seeks to foster an outdoor learning environment through open spaces, natural areas, and learning gardens, extensions of the school's educational goals. The introduction of an outdoor-oriented curriculum is an exciting way to introduce students to the complexities of our environment, built landscape and inspire artistic expression. The building design models examples of green building design, while also providing opportunities for independent student learning and small group collaboration, teaming and community exploration and learning. Inherent to this approach were the following objectives:

## **AN EMPHASIS ON NATURE**

The school is located within the landscape purposefully to provide visual access to the existing grove of conifer trees. Within this forested area, a series of trails and areas with restored natural understory vegetation will invite students to explore nature. Future designs for play features, learning stations and an outdoor classroom will continue to support these opportunities.

## **THE FLOW OF WATER**

Water is a primary theme of the site and provides potential learning opportunities for students and the community. The underground rain catchment cistern and exposed stormwater system are intended to be functional and also provide learning opportunities that will tell the story of how the water is drained on the site. Students and visitors can track the flow of water from roof runnels and gutters to trench drains and bioswales in the parking lots, following the water from the school's roofs and impervious surfaces back to the forested wetland and creek. Additionally, reclaimed water stored in the rain catchment cistern will be seamlessly integrated into the building system and is an important component of the building's water use reduction.

## **CONNECTIVITY**

Clear visual access and providing opportunities for visitors to navigate from place to place are priorities of the site design. The intent is not only to connect the school with the outside play areas and forest, but to also connect the site with the neighborhood. Although a 20-foot planted buffer surrounds the site, it is envisioned that this landscape will naturalize over time and provide more extension connections between the site and the neighborhood.

## **ENVIRONMENTAL STEWARDSHIP**

Prior to the start of the project, the site was dominated by invasive vegetation such as blackberry, ivy, and herb Roberts, which had completely choked out the native plants. The intent of this story is not only to tell the process of the design and construction, but also to continue support the on-going management and environmental stewardship within our extended schoolyards.



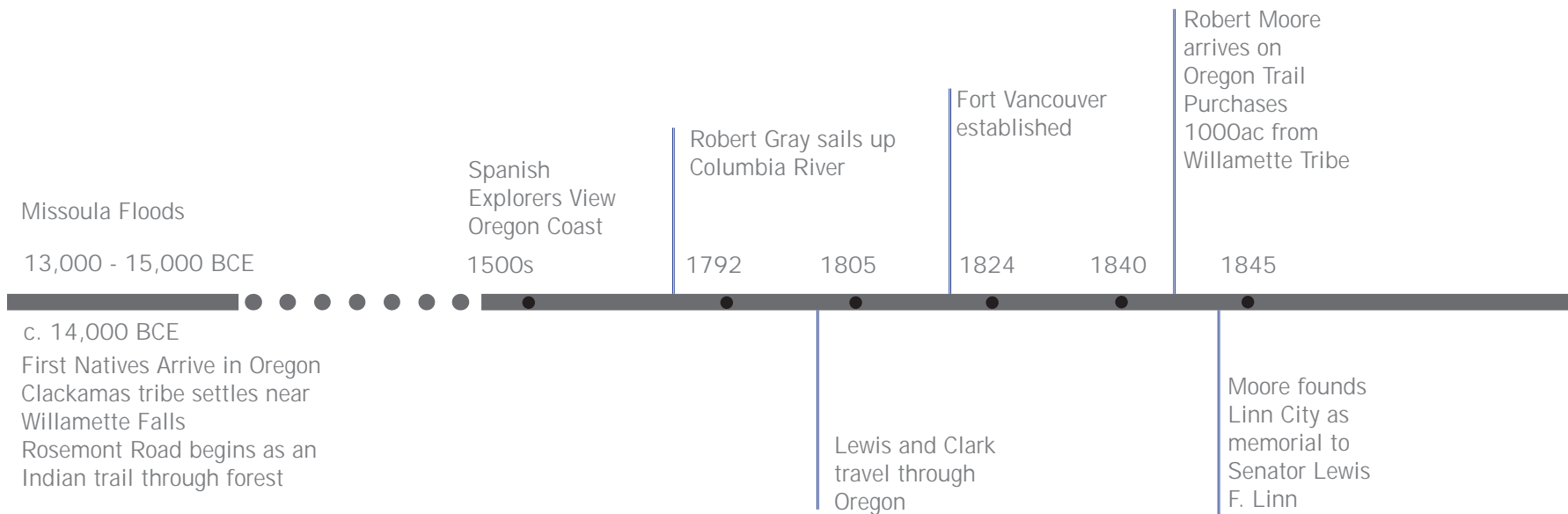


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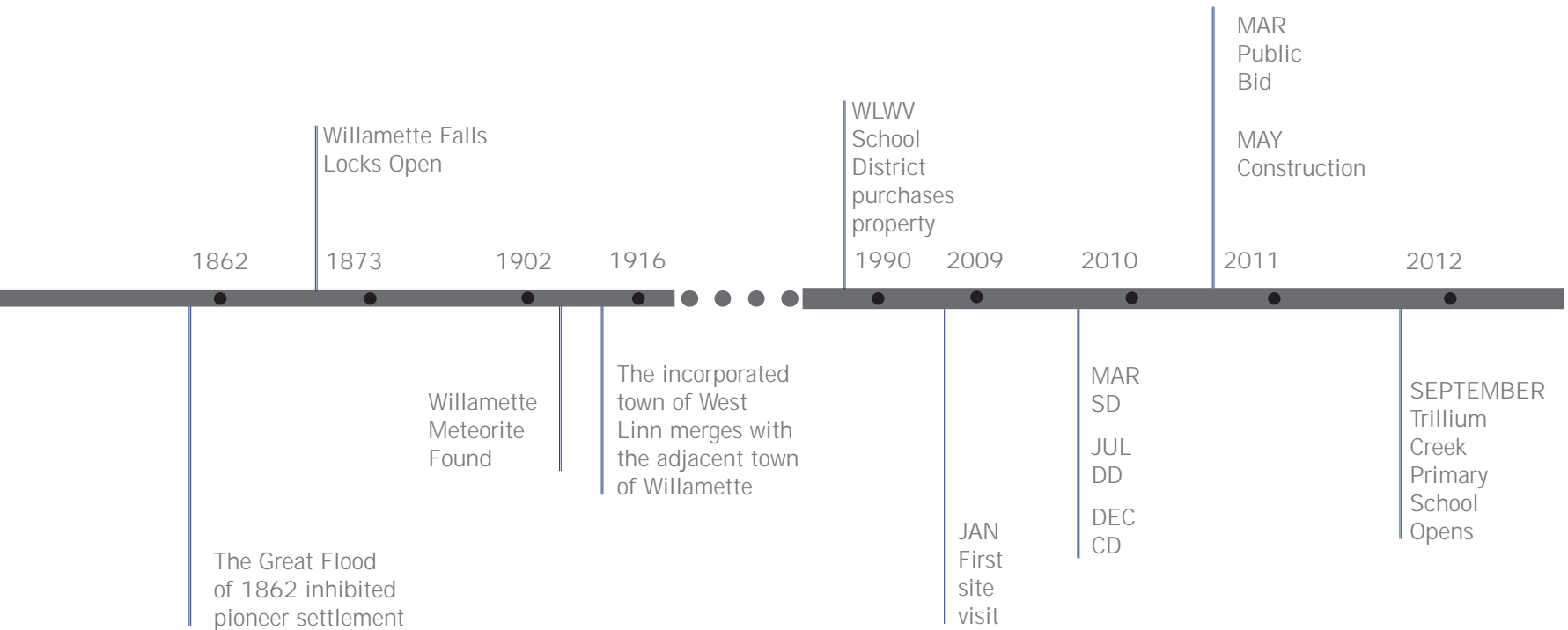
The design committee met regularly throughout the schematic design process. Meetings, workshops and site visits throughout 2009 helped to identify opportunities and constraints for the built and natural environments and future learning opportunities for students. Virtual and local tours of innovative educational spaces throughout the region and world prompted discussions about multidimensional and flexible spaces, natural building materials, the importance of natural light, and the role of students in designing learning spaces. These became foundational principles throughout the design process.

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# Timeline









HISTORY

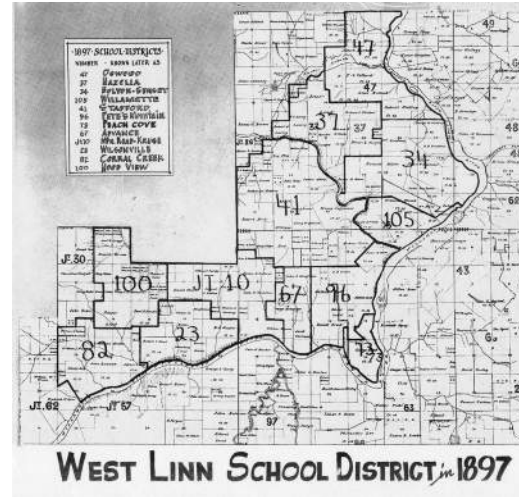




# Regional History



BOONES FERRY  
(CLACKAMAS COUNTY HISTORICAL SOCIETY PERMANENT COLLECTION)



WEST LINN-WILSONVILLE  
ATTENDANCE AREA IN 1897



THE FLOOD OF 1890  
(CLACKAMAS COUNTY HISTORICAL SOCIETY PERMANENT COLLECTION)



WILLAMETTE METEORITE  
(CLACKAMAS COUNTY HISTORICAL SOCIETY PERMANENT COLLECTION)





# Historic Land Use

Historic land use of the Trillium Creek Primary School property is well documented through topographic maps, aerial photographs and county records. Topographic maps indicate structures and the changes in grading on the site, while aerial photos and records document more specific activities. Consistent with other parcels in the county and city, all historic maps suggest that the Trillium Creek Primary School site was primarily used to support small scale agriculture and was not previously developed prior to construction of the school.

The site, referred to historically as the “Erickson Site,” was annexed in the City of West Linn September 15, 2009 ballot under Measure 3-342 and zoned R-10 for residential use. All schools in the City of West Linn are zoned R-10 because no “school” zone classification exists. Prior to the District’s purchase of the property in 1990, almost twenty years prior to the annexation, at least two generations of Ericksons and Rands managed the site and orchards. The residential parcel to the north of the school site, flanked by District property on both sides, is inhabited by Palmer and Darlene Erickson.

The oldest topographic map, dated 1954 and shown to the left, indicates that the school site was heavily vegetated, with an orchard on the eastern portion of the property, separated by the headwaters of Trillium Creek. A small structure and farmhouse were located to the west of the site, close to Rosemont Road. The surrounding properties were also used for cultivation.





1960

By 1960, the orchard on site was cleared, but adjacent properties were still being used primarily for agricultural purposes. Residential properties within the area were still sparse.



1970

By 1970, the agricultural use on parcels surrounding the school site appears to have declined with the start of development to the south of the property. An additional two structures were erected on the school site and orchards reestablished near the adjacent 1045 Rosemont Road property.



1980

By 1980, Hidden Springs Road was built to the north of the site, with complete construction of subdivisions to the south and east of the property. Agricultural land to the west of the site, across Rosemont Road, was still present at this time. All orchards on site appear to be removed permanently from pictures and maps taken in 1980 and 1984.



1994

The School District bought the property in 1990. Previous owners include George C. and Ora E. Rand, who purchased the property at an undeterminable date from Robert and Mary Rand. The 1990s saw continued development around the Trillium Creek School site, while the school property remained heavily vegetated and with a single, small residence and detached garage.





Hidden Springs Road

Rosemont Road



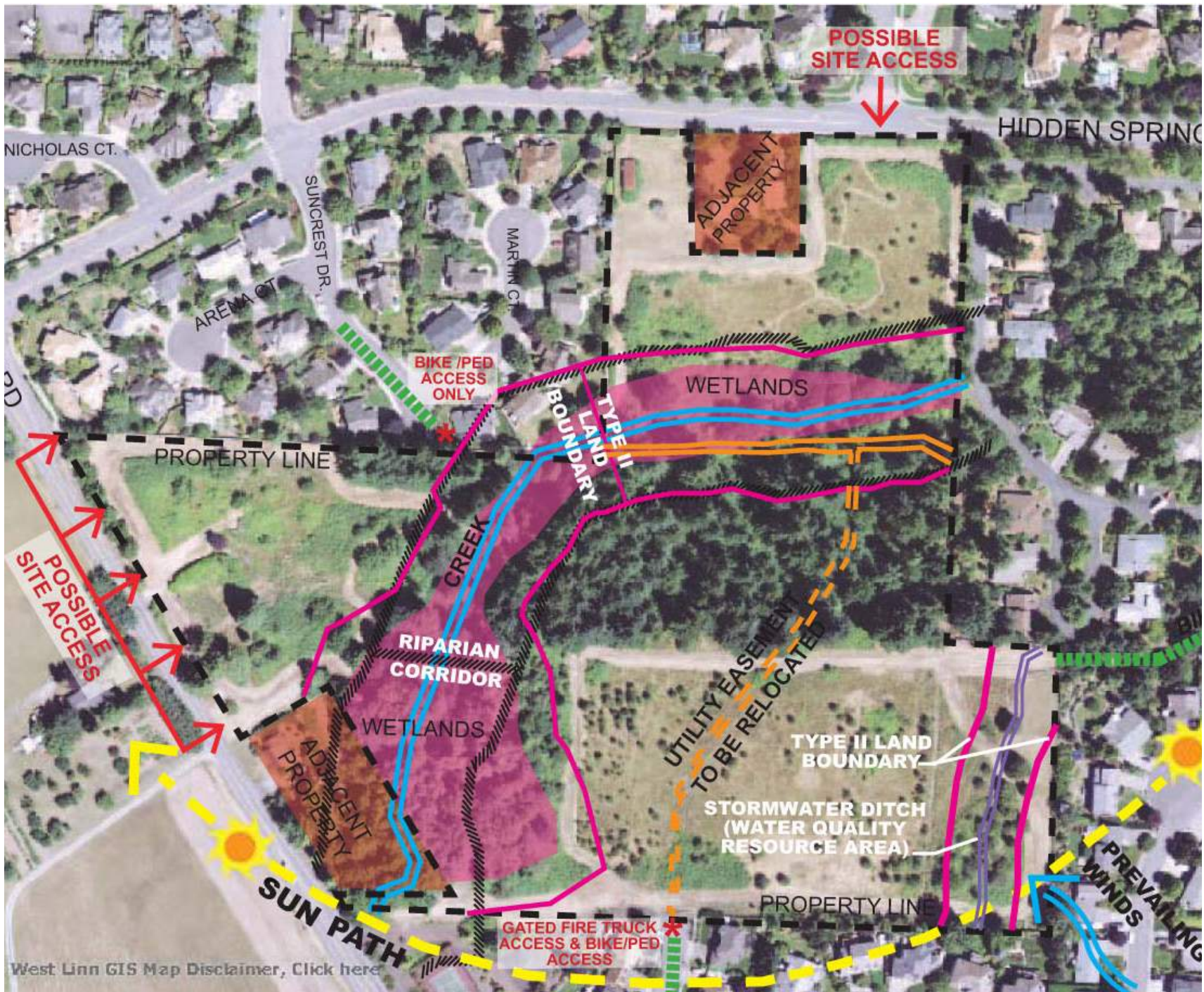






SITE & LANDSCAPE  
ARCHITECTURE



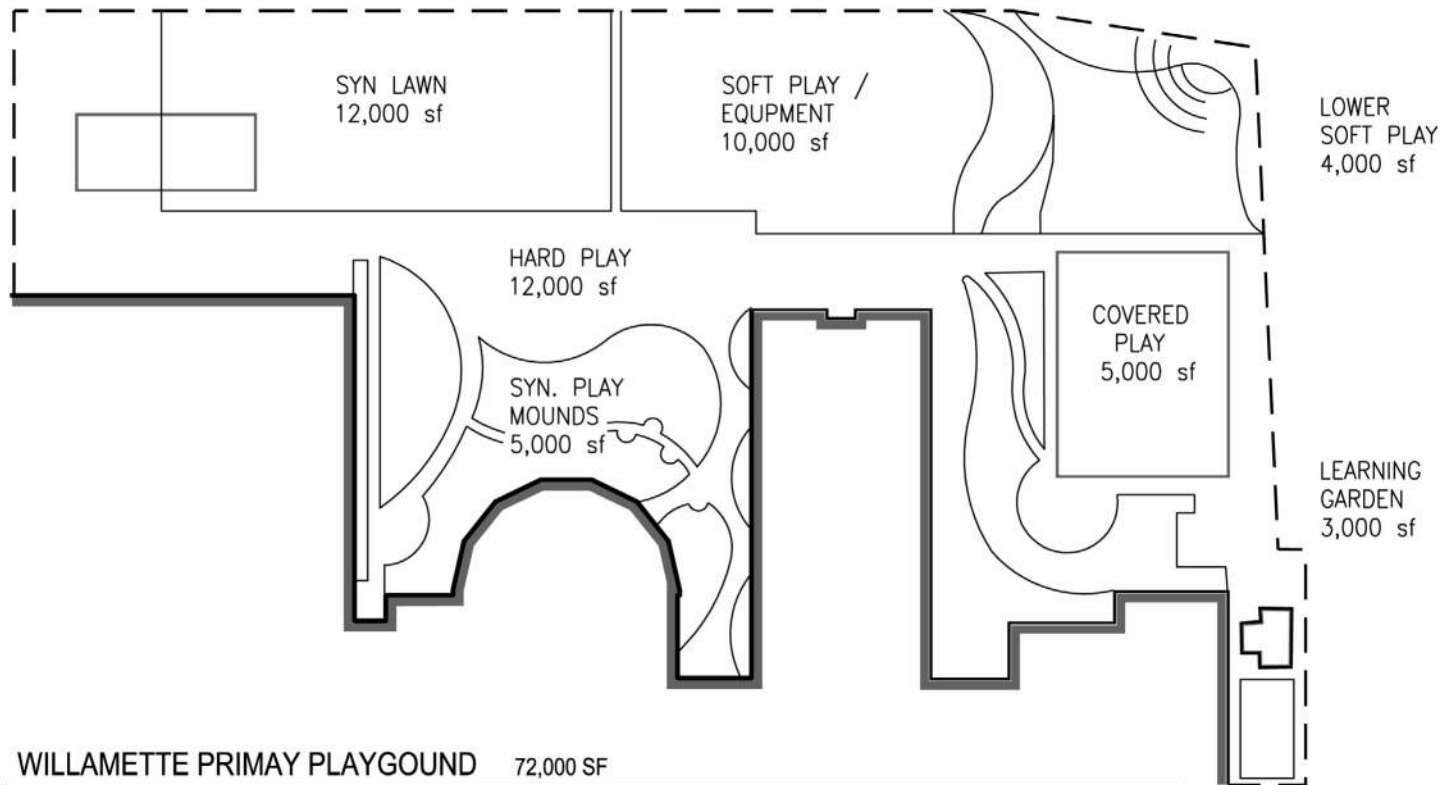


# Site Analysis

Walker Macy Landscape Architects started their analysis of the site with a lengthy visit to view the land. At the time of the first site visit, blackberries were extensive through the forest and wetland portions of the site, inhibiting access to those areas. In addition to site visits by Walker Macy, other naturalists and specialists conducted in-depth analyses of the site conditions. Through a combination of site observations, research and wetland monitoring, a wetland consultant submitted a formal wetland delineation and description of the environmental features of the site to the Oregon Department of State Lands. A significant riparian corridor, or land adjacent to a stream or creek bank, was also identified at this time. Concurrently, based on site visits and observations, an Arborist concluded that impact to the Douglas fir trees on the edge of the forest would disturb the entire grove. These analyses provided the team with guidelines for required wetland buffer areas and a recommended setback from the forest area. Paired with an evaluation of the steep slopes on the site, the design team was able to determine a suitable location for the building within these constraints and other complimentary site features.

After the general building location was located to the south of the site, additional analysis considered the site's exposure to the sun. The diagram to the left shows the sun path schematic, which informed the team's design for the building orientation and planting plan. Additionally, the team began to discuss potential site access from the established Hidden Springs Road to the north and Rosemont Road to the west of the site.







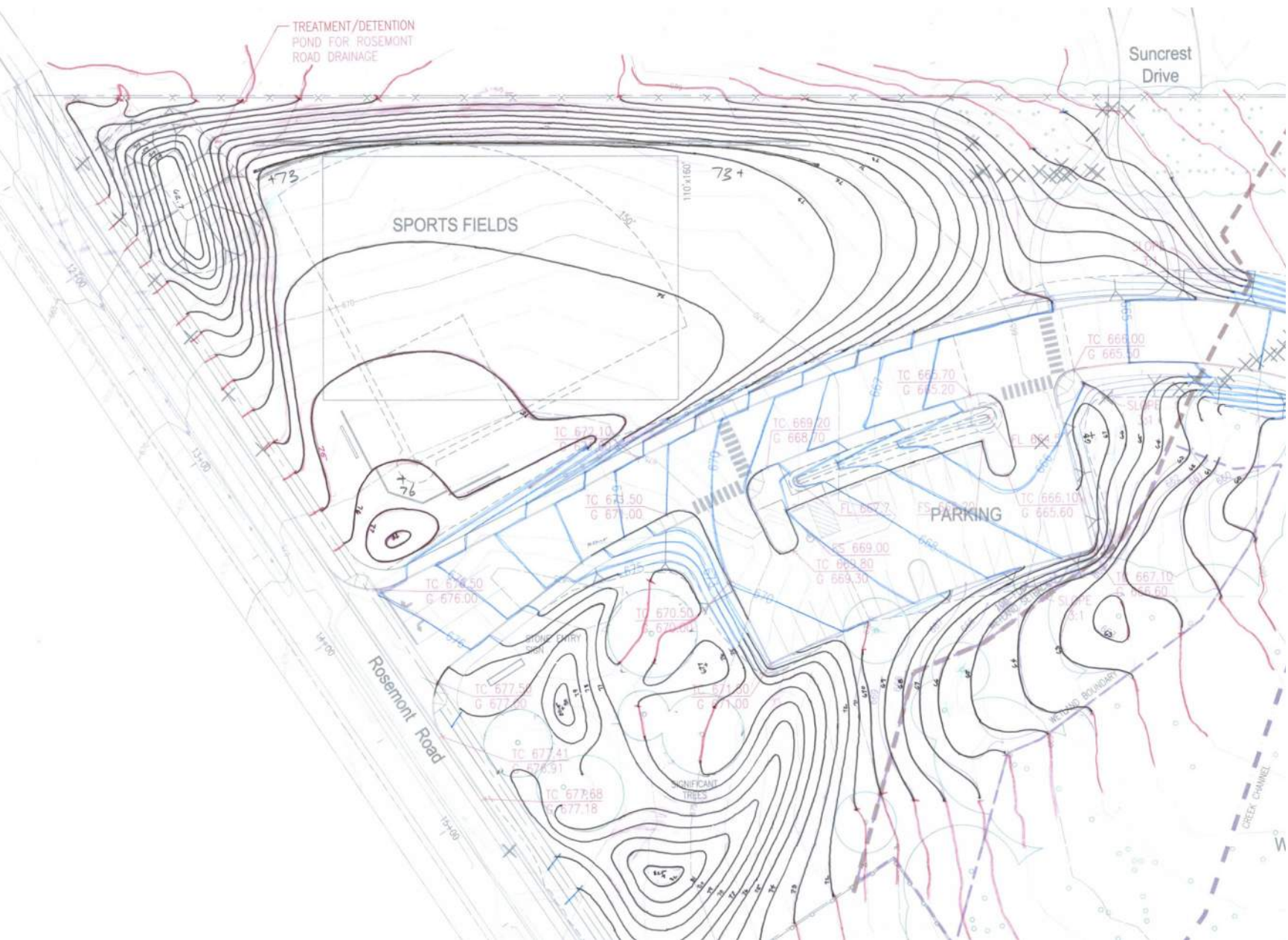
# Site Programming

With the understanding from site analysis exercises that the site had a very limited area for development due to the on-site wetland and significant grove of Douglas fir trees, the Walker Macy team considered the potential for play features and programming. The design and total available square footage of play areas at Willamette Primary School served as a model for the Trillium Creek play program due to similar space constraints the Walker Macy team faced when designing those play features. Willamette Primary School was designed to have highly efficient play areas with diverse features and small transitions between these zones. Initial programming for Trillium Creek, shown below, considered similar and future play features, such as sensory gardens and tents within the forested area. The design for the play program at Trillium Creek also considered the existing site opportunities with the forest and wetland habitats as unique areas for play, learning and student access.

## PROPOSED TRILLIUM CREEK PLAY PROGRAM

Hard Play	13,500 sq.ft.
Covered Play	2,200 sq.ft.
Tents	1,000 sq.ft.
Soft Play	8,500 sq.ft.
Lower Soft Play (kindergarten)	2,000 sq.ft.
Play Mounds / Synthetic Grass	6,200 sq.ft.
Sensory Garden	2,500 sq.ft.
Nature Play / Misc. Circulation	<u>13,300 sq.ft.</u>
Sub-Total East of Building	49,200 sq.ft.
Learning / Food Garden	10,000 sq.ft.
Sports Fields	<u>30,000 sq.ft.</u>
Sub-Total West of Building	40,000 sq.ft.
<b>GRAND TOTAL</b>	<b>89,200 sq.ft.</b>





# Site Grading

Shaping the land to accommodate such a large school, while accommodating accessibility and positive drainage, was a significant design challenge. As the design progressed, areas were graded out and then regraded to accommodate changes and input from the design team. An effort was made to balance the cut and fill of the site so that the cost of off hauling excess soil was limited. Reducing the cost of hauling soil off site was significant and allowed the design team to use the site budget for other features that would have strong connections to components of site programming and student learning, such as native plantings, stormwater features and the restoration efforts within the wetland and forested areas.



GRADING THE FUTURE BUILDING PAD

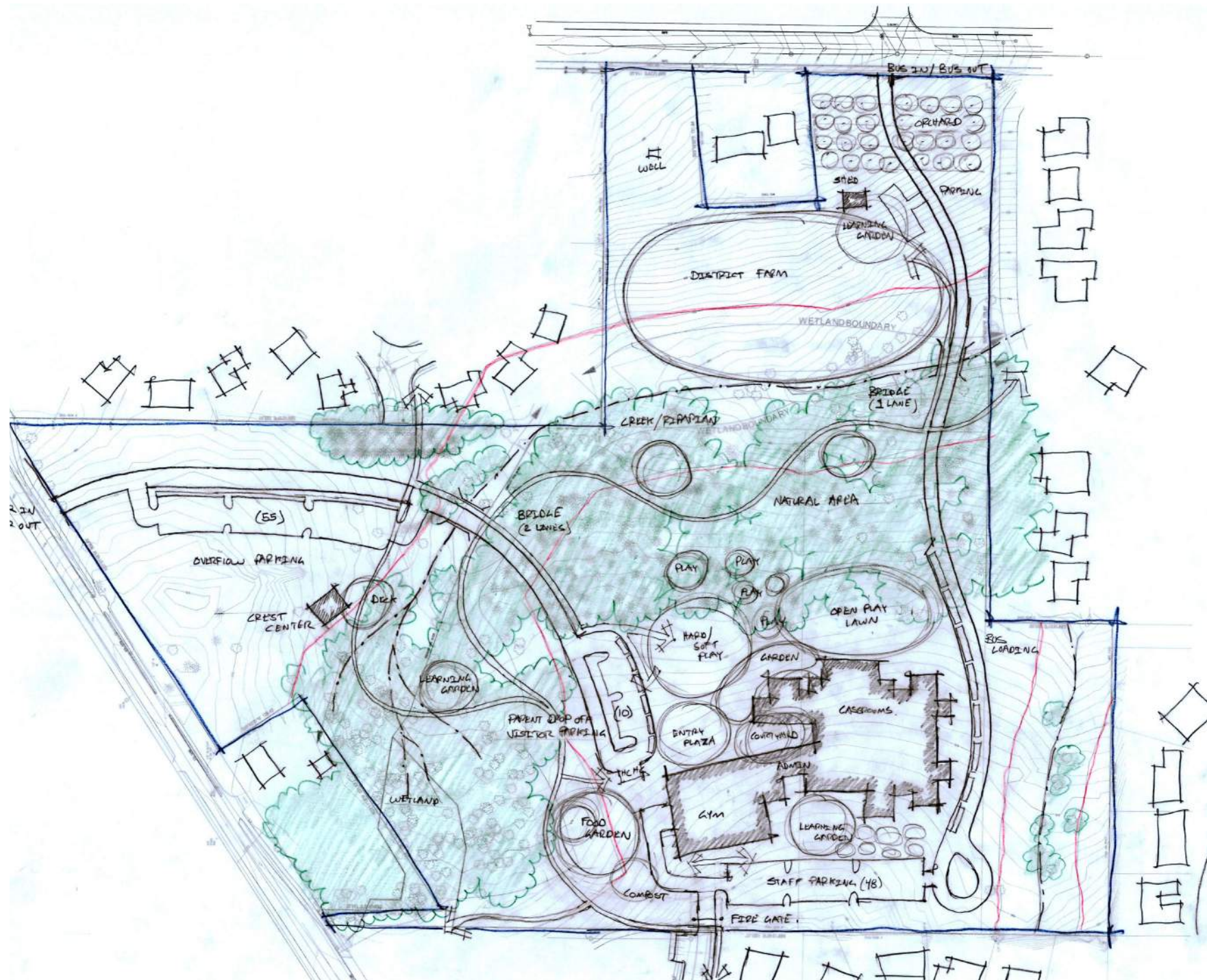


FUTURE STORMWATER TREATMENT  
CISTERN

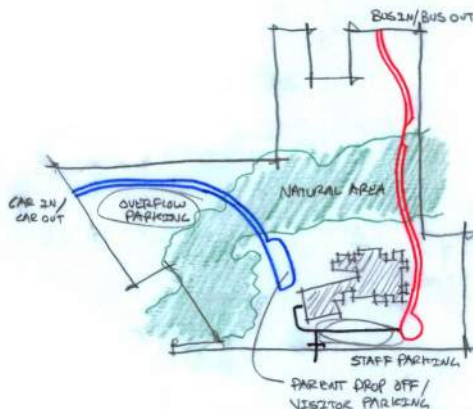
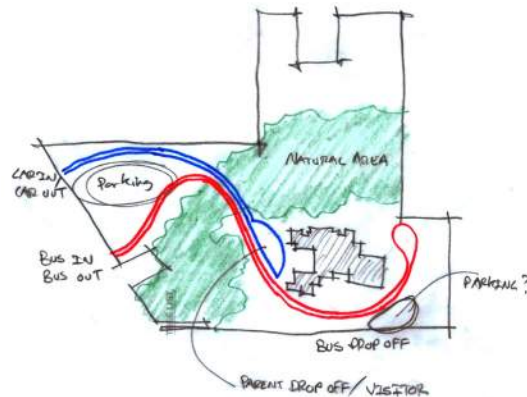
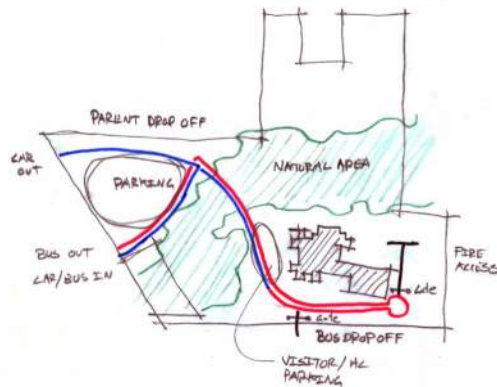


GRADING THE SITE

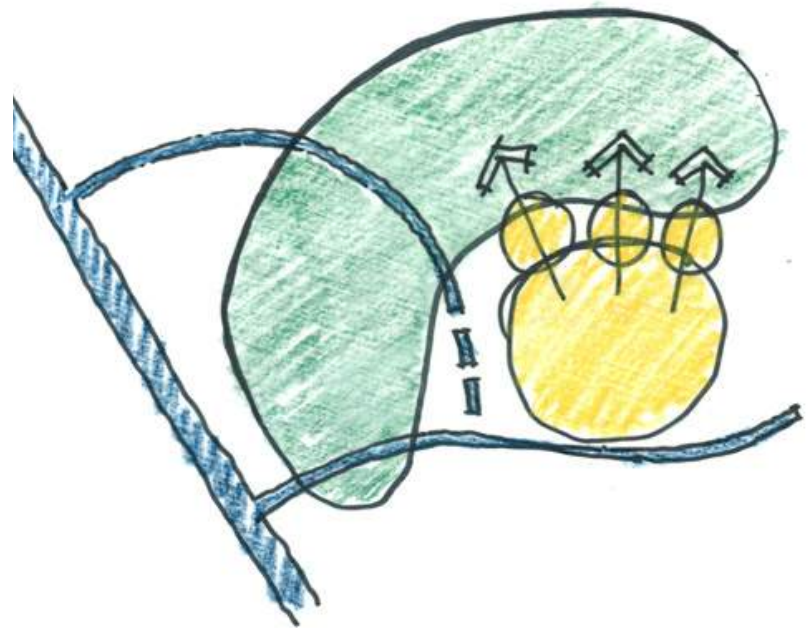




# Circulation and Parking



The site was developed to minimize the impact on the environmental assets which were considered a high value to the educational curriculum of the school. With this in mind, the design team developed a diagram to emphasize the direct connection between the school, the forest, and wetlands, purposefully locating the circulation behind the building. This diagram was an important step which the alternative parking schemes were tested against. The final scenario was chosen based on maintaining this relationship between students and their environment and the conclusion that it created the least impact to the wetland.



BUILDING / SITE RELATIONSHIP DIAGRAM





#### ALTERNATIVE A

In this first scenario, site access for buses is provided off of Rosemont Road, while parent access is off Hidden Springs. Challenges presented itself with crossing Trillium Creek and the Wetland from both the north and west to access the building.



#### ALTERNATIVE B

This second scheme explored locating staff parking to the west of the wetland, while providing parent drop off and parking at the front entry to the school. This scheme maintained that direct connection between student and environment. Site access for buses is off of Hidden Springs. While impact to the wetland was reduced, it was not completely minimized and still presented a challenge.





#### ALTERNATIVE C

In the third scheme, bus and visitor circulation is now also routed off of Rosemont Ridge. While both access roads now crossed the wetland just to the west, this scenario pushed the school building further north into the trees, impacting the significant Douglas fir grove.



#### ALTERNATIVE D

As part of a creative solution to the circulation problem, the School District presented the possibility of an easement with the neighboring development. This scheme explored crossing a much smaller portion of the wetland to the west of the site and a portion of Trillium Creek to the east of the site where it is channelized.



LEVELS OF MAINTENANCE

# Site Design

With approval of the easement from the Hidden Springs Neighborhood Association, the final scheme located both the visitor and bus loading off of Rosemont Road. The site provides a total of 120 parking spaces on a daily basis, while additional capacity for evening events is provided along the bus loading lane and the student drop off area. A driveway between the visitor parking lot and the staff parking lot also provides capacity during evening events. Emergency vehicle access extends from the staff parking lot turnaround through the hard play area to an emergency vehicle turnaround at the northern edge of the play area.

As the building and site designs developed, the relationship between the building, environment, and site was strengthened. Once the circulation approach was finalized, the team started to develop the other site programming, including the play, forest area, entry experiences and planting plans. An effort was made to locate the building as far to the south of the site as possible to preserve the existing trees to the north. Protecting this natural resource was an important goal during the design process and informed the floor plan of the building to connect students and occupants to this natural setting.

The site landscape plantings are grouped into three basic zones: plantings adjacent to the building, water quality plantings, and lawn. The majority of plants are native and climate-adaptive plantings which are drought tolerant and easy to maintain. Plantings adjacent to the building will include shrub and groundcover plantings as well as water quality plantings. Water quality plantings are intended to clean and infiltrate runoff from surrounding impervious surfaces to the east and west of the classroom wings. In addition to this water quality function, these plantings can also educate students about these unique plant communities that also provide passive cooling adjacent to the building.

Several large trees are included in the play area to provide shade and wind breaks. Deciduous trees selected for parking lots, plazas, and play areas will be drought-tolerant, hardy in urban conditions, and have small leaf sizes for ease of maintenance. Small flowering trees will provide seasonal interest at the main entry plaza and the student entry. A small fruit tree orchard is envisioned as an integral aspect of the learning garden with the potential to provide a direct connection as a food source. Screening trees and shrubs will provide a planted buffer between the service area and the site circulation systems.







# Vegetation Management

Prior to construction, site visits revealed that the future school site was inundated with invasive blackberry, ivy and Hawthorne trees and shrubs. As an initial treatment for these invasive species, and to provide access for additional site visits and assessment, a herd of goats lived on-site during the fall and winter of 2010 and early months of 2011. These goats and the goat herder managed the invasive vegetation without the introduction of chemicals to the forest understory and on site wetland and creek. The goats significantly weakened these invasive plants by eating the leaves and new growth and disturbing their vines and roots, making the plants more susceptible to later, targeted treatment. The use of goats for vegetation management was the first of a diverse array of approaches used to eradicate the invasive vegetation on the school site.



FOREST UNDERSTORY AT BEGINNING OF GOAT  
VEGETATION MANAGEMENT PERIOD



FOREST UNDERSTORY AFTER GOAT  
VEGETATION MANAGEMENT PERIOD







ARCHITECTURE



# Building Design

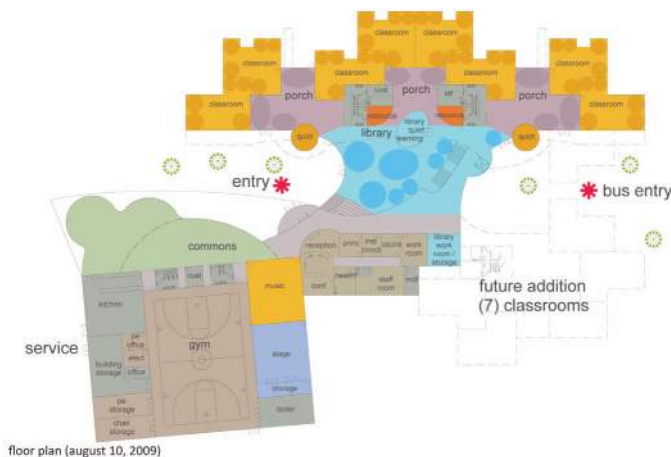


Once the site and environmental relationships were secured, the building design started to take form. The student-centered design of the building stemmed from a variety of sources of input and a memorable student request, voiced during an early design charrette, for spaces where he and his peers could be “captains of their own learning.”

Classrooms and porches are designed to be flexible and open, with mobile furniture and limited built-in casework. A unique “oriel” within each classroom provides a small, quiet environment for independent learning. Children can also easily identify their classroom from all around the site from the oriel’s bright colored tiles. In addition to the oriels, there are areas for small group study and learning throughout the school, as well as private study spaces for the diverse population of students to individualize their learning in an environment that is comfortable to them. The multi-dimensional library is the center of research and inquiry within the building and presents a gathering space for students to collaborate and interact with each other across grade levels. The administration, wellness and kindergarten wings are elevated four feet and provide a visual connection with the library and the natural settings outside. Another key tenet of the design is the abundant transparency within the building that facilitates connections, both within the building between students, staff and teachers, and beyond the indoors to the site itself.

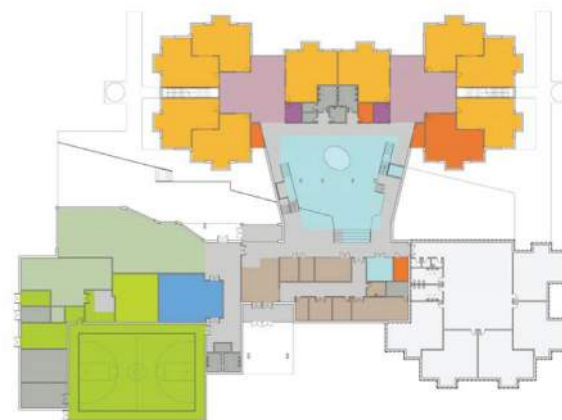
The reception space within the administration area is central to both entrances, embracing visitors and students that enter from either courtyard. The main entrance to the west of the building has a concrete entry plaza at the drop-off and pick-up area, while the student entry to the south has a covered walkway that extends to the bus loading area. An array of photo voltaic (PV) panels is installed on top of this covered walk to demonstrate renewable energy production to students and the community. Energy produced from this array can be tracked on the building’s management system. In addition, the main entrance plaza celebrates the theme of water, exposing the path rainwater takes from falling onto the roof to traveling down the courtyard and into the water quality swales within the landscape.





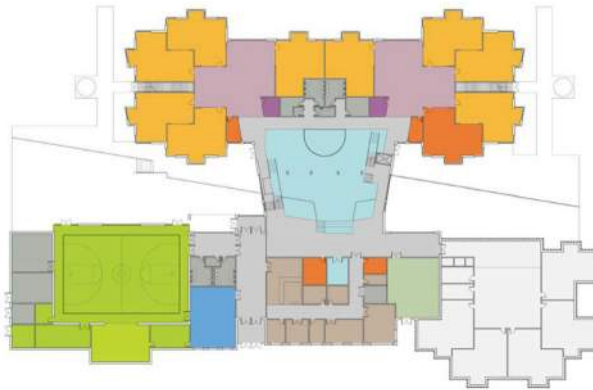
## AUGUST, 2009

Embracing themes from the various design charrettes and conversations from schematic design phases, the floor plan featured a strong relationship between the library, porch and classroom learning places in its first iteration. Classrooms were located to the north of the building to capitalize on the site's views and natural setting. South facing windows were minimized or covered by sunshades to reduce thermal gain. Windows to the north were maximized and included a clearstory to ensure ample, natural light throughout these learning places. The first design of the "crow's nest" in the central library also emerged during this phase.



## SEPTEMBER, 2009

The second design evolved to locate the administrative work spaces and reception centrally to welcome visitors from both courtyards. The gym and cafeteria spaces to the south-west of the building became more defined, informed by the designs at Boones Ferry Primary School and other spaces in the District. The design team also confirmed that the pre-kindergarten and kindergarten porch and classrooms in the southeast corner of the building would be part of a future addition or alternate during bid.



floor plan (september 28, 2009)

## OCTOBER, 2009

After confirmation that lunch would occur in the learning neighborhoods, or classrooms and porches, DOWA explored how the 3,000 square foot wellness commons in the southwest portion of the building could function as a flexible space. The total square footage of this common space was reduced to allow for ample kitchen space to accommodate for this model and the required distribution of food throughout the school. The flexible wellness commons space was re-designed to support a variety of school and community activities, such as all school meetings, wellness classes, and small group meetings.



floor plan (november 3, 2009)

## NOVEMBER, 2009

Designs for five classrooms per porch on the first floor, with porches on the second floor central to four classrooms allowed for the addition of an outdoor learning space and green roof. The building design also considered opportunities for connections to nature, natural light and learning opportunities around energy conservation. High windows provide daylighting, while lower windows provide visual connections to the outdoors. This final phase pushed the design team to find a balance between total percentage of glazing and building facade area to ensure energy efficiencies.





# Building Programming



Trillium Creek Primary School is built to accommodate 500 primary school students. The building includes four learning neighborhoods to the north of the building, two per floor, and one pre-kindergarten and kindergarten learning neighborhood to the southeast of the building. Second floor porches to the north of the building are central to four classrooms, with access to an outdoor learning and green roof space. These roof gardens are accessible to students and teachers to connect classroom learning to garden-based education curriculum and provide outdoor classroom meeting spaces for the school community. Second floor porches connect to the exterior and interior through a set of staircases, as well as a slide that connects to the library. The set of north porches on the first floor support five classrooms. These porch and classroom configurations are designed as collaborative learning neighborhoods. Evident in the detailed descriptions that follow of these building spaces are the important themes of teaming and collaboration. Interior and exterior spaces with glass provide opportunities for teachers and students to share their practice and learning with the larger school community.

During this building programming, the design team utilized BIM technology, which allowed the architects and their team of consultants to consider the three dimensional spaces and integrate various design, mechanical, electrical, plumbing, heating, ventilation, air conditioning and cooling (HVAC) components, mitigating any potential coordination issues before construction. An example of this type of modeling is included above.

The building programming was also discussed in the context of the District's sustainability initiative. Over the years, this initiative has produced common language around the notion that sustainability encompasses the three legged stool of ecology, equity and economy. Setting conversations about the design and construction of these schools within the context and notion of sustainability was important and informative when considering the impacts of interior and exterior spaces, meaningful connections to student learning, and the public bid and construction processes.



# Building Materials



Intentional and subtle design features contribute to the building's operational efficiencies. The building's orientation, on an east-west axis, increases the potential for daylighting strategies and captures solar heat during the winter months, while reducing excess heat gain in the summer. The light color of the roof, constructed with a light, single ply membrane, minimizes the heat island effect, a condition that occurs when dark, non-reflective surfaces trap surface temperatures in urban areas. In addition, efficient heating, ventilation and cooling (HVAC) equipment installed on the roof and interior spaces exceed energy performance requirements as part of the school's quest to become LEED® certified.

More evident to the naked eye are the primary colors of the classroom "oriels," covered in clay body tile, that extend from each classroom space. Students will be able to easily identify their classroom by using these markers in the landscape as a guide. The tan brick used on the first floor compliments the cream colored metal panels on the second to blend the building more naturally into its surrounding landscape and serve as a more neutral palette against which the oriels stand out.

The wealth of natural wood finishes throughout the building provide a warm canvas upon which student work can be displayed and helps to further connect the building to the surrounding natural, forested environment. Almost all wood used during the construction of the building was sourced regionally, within at least 500 miles from West Linn.





# Building Spaces

## LIBRARY

The library is designed to be the living room of the school and the center of research and inquiry. The open floor plan provides inherent flexibility for student and teacher use and offers a variety of learning environments. The multi-level design and high windows throughout this space capture daylight throughout the year. Motorized windows open and close automatically based on outside air temperatures and optimal energy efficiencies. The “tree house” perched on the second floor allows students to meet in small groups or have a quiet space for independent learning and is a beacon of the student centered design of the building. Students can return from the perch to the first floor of the library via an enclosed slide. The addition of the slide in the design for this space truly represents the great extent to which the design team went to create a place for kids to experience fun and excitement in their school day.

## WELLNESS COMMONS

The design for the wellness commons grew out of conversations around nontraditional ways to fuse gym, cafeteria and assembly spaces. When decisions were made to have students eat lunch in the learning neighborhoods, the design for the wellness commons focused on gym and assembly activities. Much like the library, the wellness commons is an open, flexible space that can cater to the needs of the event it is hosting. This area has a stage for assemblies and performances, traditional basketball court hoops and lines, a music area, and a multi-purpose gathering space in the north part of the commons for small group and community use. There is also a large climbing wall at the south end of the commons. The large windows and sliding doors at the north end of the space open to the surrounding exterior views, natural landscape, and entry plaza, connecting students to the outside during wellness activities.









# Building Spaces

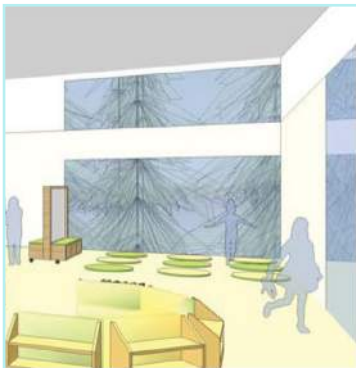
## PORCHES AND CLASSROOMS

The learning neighborhoods consist of porches, which open to the surrounding classroom spaces. These spaces are flexible in nature, allowing students and teachers to utilize this colorful, carpeted environment for a variety of activities. Students and teachers can transform these spaces with mobile casework and furniture whether they are using them for eating lunch, conducting small group meetings, presenting student work or accommodating independent student learning.

Classrooms are designed to give students and teachers the ability to shape their own learning environments. All of the furniture in the rooms is mobile to allow for complete control over the layout of the classroom. The only built in provided in the space is one wall of casework with upper and lower cabinets and a sink. As discussed earlier, each classroom also features an oriel that extends from the building and presents an independent learning place for students, giving the feeling that they are suspended in the outdoor environment. The intentional “Fat L-Shape” design of the classroom provides opportunity to separate the variety of classroom activities with permanent barriers.

Students and teachers interact with these learning neighborhoods and building to better understand the design and function through an LED light display at each porch that monitors energy, natural gas and water consumption and renewable energy produced through the on-site PV array and wind turbine. Additionally, green indicator lights in the classrooms inform students and teachers when opening or closing windows and shades in the classroom is more optimal for energy conservation.

The interior glass in the building intentionally supports teaming and collaboration between teachers, students and staff who are invited to come together as a community. These windows and glass promote the public nature of our work in teaching and learning, inviting the community to actively participate.







CONSTRUCTION









# Phases of Construction

The general contractor, Howard S. Wright (HSW), crafted a site wide construction schedule that included considerations for both the site and building construction. Given the constraints of the site and footprint areas, initial site preparation focused primarily on access. Without established driveways off of Rosemont Road in the proposed entry locations, HSW first accessed the site through the future emergency access at Bay Meadows Road. This allowed the clearing equipment to access the site and make preparations for wetland protection fencing, site fencing, erosion control, and grading of both entry drives from Rosemont Road. Establishing permanent access with both the north and south driveways was completed during the dry months of 2011.

When scheduling the construction of the building, HSW divided the building into three main areas: Building A, B and C. Crews installed the building foundations and poured concrete floor slabs in the north classroom wing, Building B, at the west side and worked east. Following the completion of the foundation and slabs, work shifted to Building A, the administration and wellness commons. The southeast kindergarten wing of the building, Building C, was established last.

It was important for HSW to complete the concrete in wellness commons early in the project, as this became a staging and work space for the framer during the wet, early winter months. The HSW team elected to install the wood framing in Building B first because this portion of the building is two stories and therefore has proportionally more finish work than Buildings A or C. In addition, by framing Building B first, the team utilized the open spaces provided by the unframed Building A and C for strategic crane operation and heavy equipment placement on the site.



JUNE, 2011

Initial fencing, clearing and grading occurred in the building and athletic field areas of site. In addition, permanent site access in the two designed locations off of Rosemont Road was established. During this time, crews also worked to relocate existing utilities and place new lines.



SEPTEMBER, 2011

Initial building footprint and floor slabs were installed during this early stage of construction. Framing of interior and exterior walls for the classroom wings in Buildings B and C occurred in the staging area of Building A, the wellness commons. HSW established temporary construction access points during this time and implemented the approved erosion control measures for upcoming precipitation events.





#### OCTOBER, 2011

Following initial framing, sub-contractors focused on the placement of wall panels for Building B, the north classroom wing. Framing continued for the remainder of the building during this month. Placement of curbs and site concrete continued as weather permitted. On-going erosion control methods were monitored during precipitation events.



#### NOVEMBER, 2011

Crews continued with on-going placement of site concrete and curbs in preparation for rainy winter months. Framing continued in areas of Building B and C. The placement of concrete footings for the covered play structure were also established at this point. Additional erosion control measures were in place, including the establishment of temporary seed mixes. Asphalt was placed for north and south entry drives off of Rosemont Road.



DECEMBER, 2011

The beginning stages of roof installation are evident at this point from the light white material, along with final components of framing within Building B, to the north of the building. On-going framing and wall placement occurred at this time in Building A and C. Glu-Lam trees, visible in the center of the building and wrapped in protective white plastic, were installed in the library. The installation of the roof membrane at Building B and preparation for roof installation also occurred at Building C towards the end of the month.



JANUARY, 2012

On-going framing and roof work occurred at this time in Building A, to west of building. Miscellaneous framing occurred throughout Buildings B and C, as well as the on-going placement of interior walls. Roof installation was completed by this stage at Building B and was in progress at Building C. The installation of the building skin, with tyvek, SAM (self-adhered membrane), and metal flashing, began at Building B with brick installation following the completion of that work.



APRIL, 2012

The construction of the covered play area continued from the previous months in eastern portion of site. The placement of the upper and lower "oriels" in classrooms was concluding, evident from bright red, green, blue and yellow tile colors. At this point, the roof installation was complete across the building. Final placement of mechanical equipment was in progress on the roofs of Building C and A. Installation of the window framing at Building B and metal siding installation happened concurrently.



JUNE, 2012

At this point, the major exterior components of the building were complete, with only minor detail work remaining. Interior finishes and fixtures were installed for the substantial completion date of June 15. Site work and final plantings, installation of irrigation, pouring of concrete and the installation of equipment and site features were on-going at this point, with a substantial completion date of July 15.

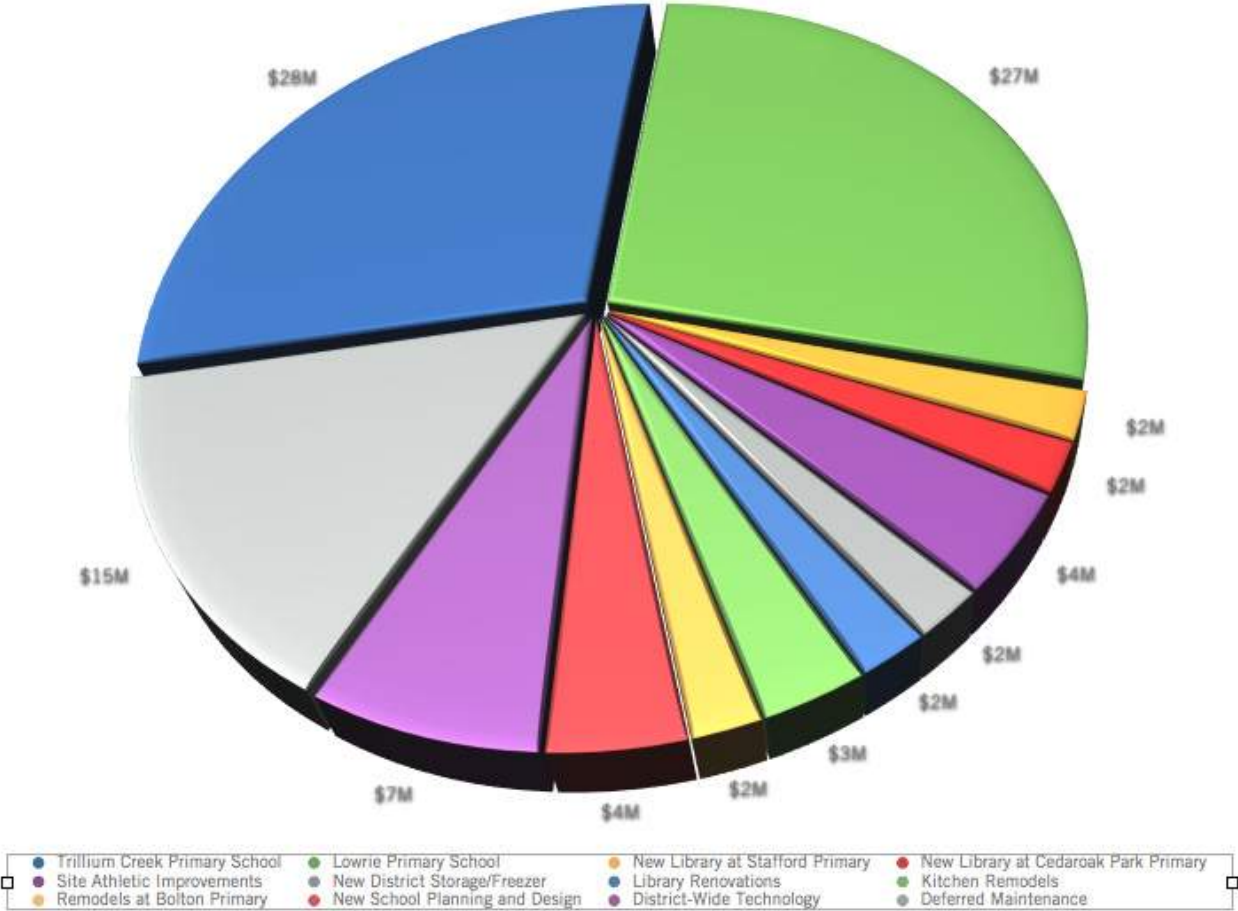






COMMUNITY  
CONNECTIONS

2008 Capital Bond Program





# 2008 Capital Bond Program

The 2008 Capital Bond Program was an important component of the work completed by the West Linn-Wilsonville Long Range Planning Committee. This committee, which includes a variety of community members, experts, and stakeholders, continuously collaborates to anticipate student enrollment, capital improvement opportunities, deferred maintenance, and other needs of the growing West Linn-Wilsonville School District.

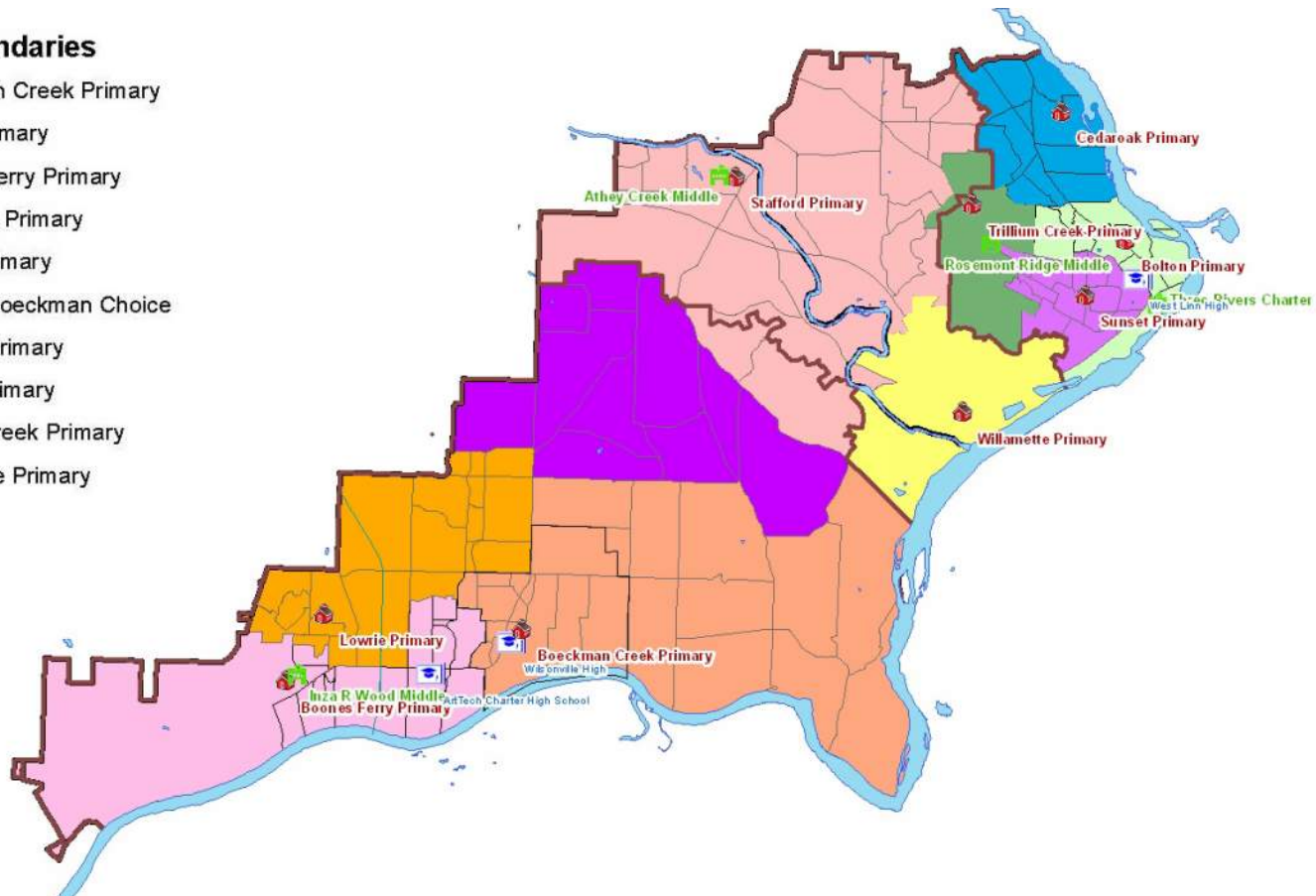
Responding to the noticeable growth at the primary level in 2006 and 2007, including a significant increase of student enrollment at Boones Ferry, Stafford, Willamette and Boeckman Creek schools, the Long Range Planning Committee conducted research, analyzed data and engaged District patrons and staff to prepare a Capital Improvement Program (CIP). This CIP addressed growth, equity, safety and security, health and wellness, deferred maintenance, technology, energy conservation and community athletics. In November of 2008, the West Linn and Wilsonville communities passed the 2008 Capital Bond Program, valued at \$98 million dollars, to fund this work. In addition to Bond Program staff, the Long Range Planning Committee is engaged as stewards of this program and the successful completion of the projects outlined in the Capital Bond Program.

Trillium Creek Primary School followed all procedures of the public bid process. After analysis of bids submitted by qualified contractors, the School Board awarded the contract to general contractor, Howard S. Wright. Throughout the construction of Trillium Creek Primary School, Bond Program staff met regularly as a team and with the architect of record to consider the various components, opportunities and challenges with the construction management of this school project within the context of the larger Bond Program. The successful management of these individual construction and renovation projects, such as Trillium Creek Primary School, was critical to maintaining the integrity of the entire Bond Program.

The Capital Bond Program team also fostered partnerships with numerous agencies throughout the construction and design of Trillium Creek Primary School. These partnerships resulted in securing energy incentives for the District, supporting pre-school child care programs, working to streamline restoration efforts on Trillium Creek, and maintaining critical community connections to the City of West Linn and Clackamas County.

## Primary Boundaries

-  Boeckman Creek Primary
-  Bolton Primary
-  Boones Ferry Primary
-  Cedaroak Primary
-  Lowrie Primary
-  Stafford Boeckman Choice
-  Stafford Primary
-  Sunset Primary
-  Trillium Creek Primary
-  Willamette Primary



# District Attendance Boundary Process

The attendance area adjustment process was presented to the School Board at the study session on September 19, 2011. The first step in the process was to create a task force made up of parents, District staff, school staff, a Board member, the transportation director from First Student, a Long Range Planning Committee member and community partners to ensure all perspectives were considered during this work. The task force's primary objectives were to study and recommend an equitable reconfiguration of the attendance boundaries for the District's primary schools, provide input and leadership throughout the boundary adjustment process, and facilitate the engagement of the District community in the process.

Key considerations discussed during this adjustment process were the need for demographic balance, clear and timely communication, accessibility to each school, staffing balance, quality programming, equity of resources and program, fostering a sense of collaboration and community, and considering the Long Range Planning Committee's growth predictions. The task force engaged community members and solicited input and suggestions regarding these goals through two community forums held in each city, online surveys, frequently asked questions, and reports to the School Board. These events informed the evolution of the boundary scenarios and shaped questions to consider when finalizing the approach.

After the first community forum, the task force was able to develop and consider multiple scenarios to discuss and vet against initial considerations. A final scenario, shown to the left, was prepared for the final community forum in February, 2012 and approved by the School Board in the March, 2012 public session.



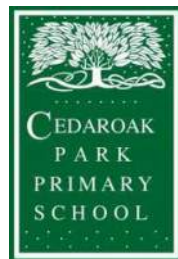


# A Community of Primary Schools

The entire West Linn-Wilsonville community was invested in the design, construction and establishment of Trillium Creek Primary School. As an adopted School Board goal for the 2011-2012 school year, departments across the District worked to ensure that the mission, vision and philosophies of the School District were incorporated into the culture and successful opening of Trillium Creek Primary School.

The existing primary schools informed and pushed the envelope of innovative design within the school building and exterior landscape. As one example, the need for spaces to support individualized learning within existing primary schools inspired the architect's design for the interior elements of the building. Additionally, the movement at the primary level to integrate garden-based education into interdisciplinary curriculum resulted in the construction of learning gardens to the west of school building. Similarly, the design and construction of Trillium Creek informed renovation projects at three existing primary schools. The research that was completed for both Trillium Creek and Lowrie Primary Schools about a multidimensional library space that could serve as a central place for inquiry and research informed the design for library and exploration spaces during projects at Cedaroak Park, Stafford and Bolton Primary Schools.

The opening of Trillium Creek Primary School provided an opportunity to create a sense of renewal and recommitment to the culture, teaching and learning, best practices in instruction and instructional leadership, and learning communities based on teaming and collaboration at the entire primary level. District staff incorporated the entire primary team in conversations about curricular planning, food service programming, staff selection and other important considerations that were needed to successfully open Trillium Creek to ensure equity across all primary schools and that District philosophies, the mission question and vision themes were entrenched in the teaching and learning and operations for the entire District community of primary schools.

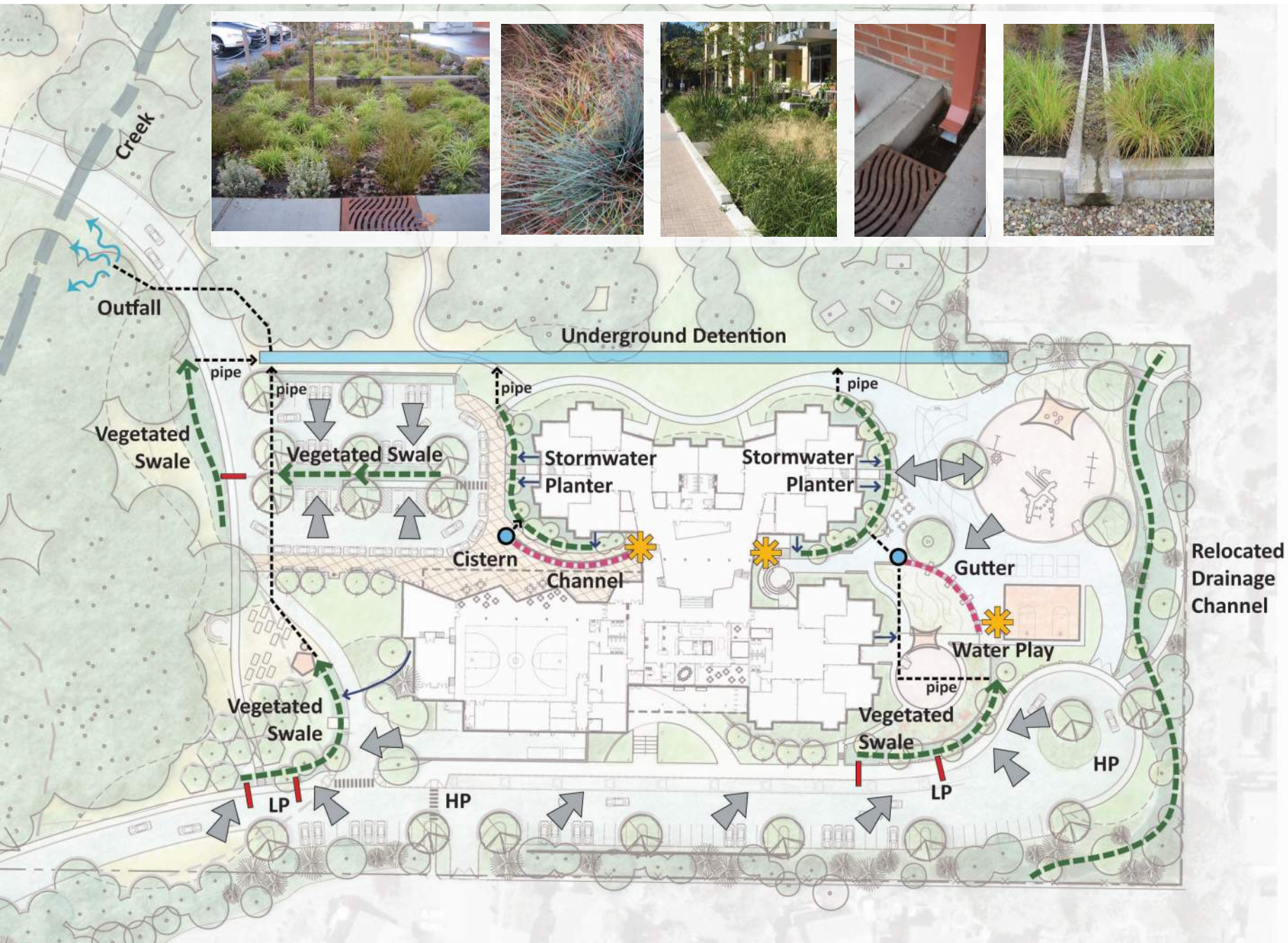








CONNECTIONS TO  
STUDENT LEARNING

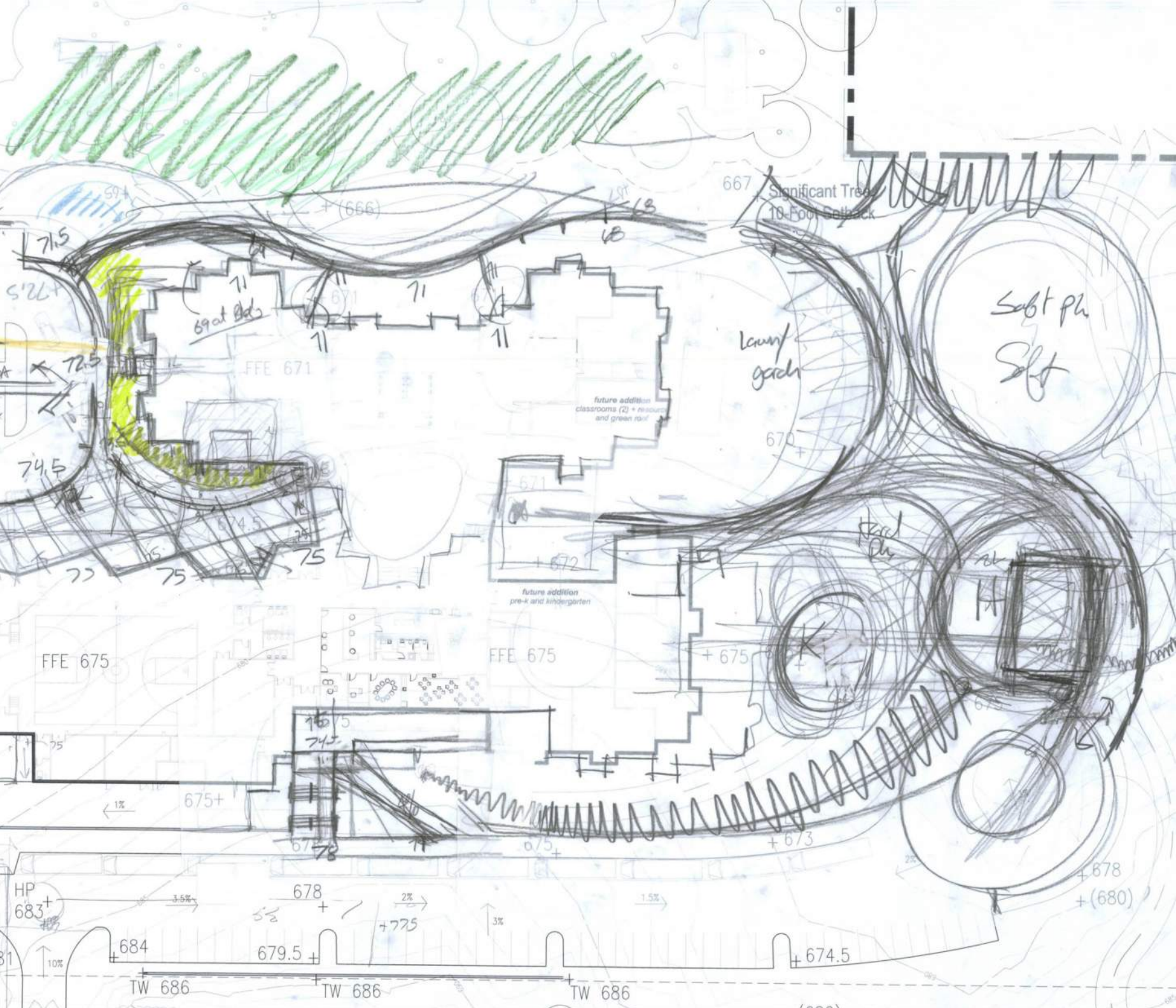


# Integrated Stormwater

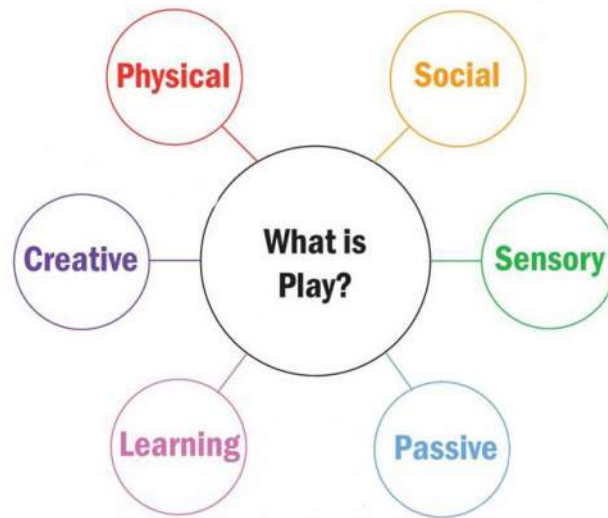
The integrated stormwater system is intended to provide a learning opportunity for students and an educational tool that helps to tell the story of how the water is drained on the site. Passive drainage through runnels, water channels, gutters, and trench drains allows students to follow the water that flows off of the school's roofs or impervious surfaces along its course back to the creek. The design of this system is intentional and steers away from a typical catch basin systems that conceal this educational process.







# Nature Play



Nature Play, a popular term in landscape design and educational programming, was discussed in detail during design efforts and focused on the site's unique forested area. The design team wanted to create an environment where students first experienced nature through their own creative play in the schoolyard directly adjacent to the building and then learned about natural features and ecosystems of the extended site through integrated curriculum and studies. This design intent moves beyond simply putting nature into the playground, but instead provides a saturation of the site's ecology into the daily lives of the students.



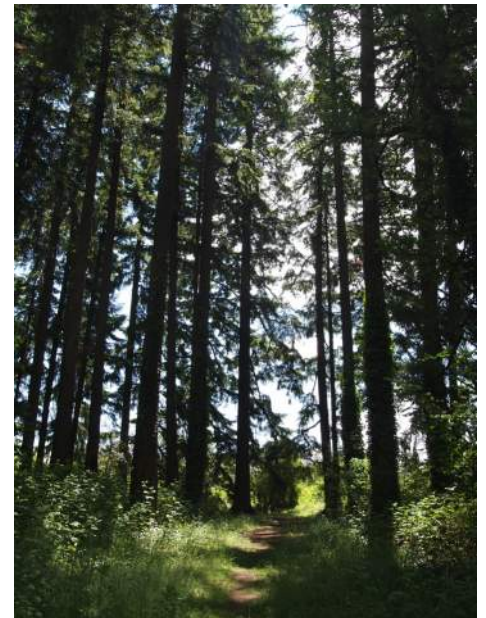




# Scrub-Shrub and Forested Wetlands

Site observations during initial site visits and the design phase prompted a documented exploration of the environmental features on site. Testing and observations concluded that portions of the site had distinguishable characteristics and met the criteria of a forested and scrub-shrub wetland. A wetland is defined by three features: hydrophilic vegetation, deoxygenated soil elements and the presence of saturation or inundation of water. A forested wetland is a specific type of wetland that is only periodically saturated or inundated with water and has woody vegetation that is 6 meters or taller. Portions of the Trillium Creek wetland meet these characteristics, while others are defined as a scrub-shrub wetland, with vegetation less than 6 meters tall. The entire wetland is responsive to precipitation events and is only periodically inundated.

As a component of the Department of State Lands removal-fill permit that was required for the impact to the wetland at the entry roads, compensatory wetland mitigation areas were constructed adjacent to the existing wetland boundary. These mitigation areas were designed to both create new wetlands and enhance existing degraded and overgrown portions adjacent to the Trillium Creek corridor. These areas will be monitored, as required by the conditions of the permit, to meet the mitigation performance criteria for hydrology, soil characteristics and vegetation. The mitigation areas will also serve as models for students engaged in restoration activities within other portions of the wetland and forested areas.







# Restoration and Environmental Stewardship

Prior to the opening of school, conversations with teachers, administrators and staff from the District's science center, CREST, outlined effective and meaningful approaches to student-led restoration. This work resulted in the development of a curricular resource for teachers to engage students in wetland studies during the inaugural years at Trillium Creek Primary School. Connecting science and social studies standards and District scope and sequence, these wetland studies fuse classroom learning and projects with field studies within the landscape's diverse habitats to support meaningful learning objectives. These studies build on the work teachers and students have done with topics of environmental stewardship, restoration and place-based education throughout the District and aim to enhance this unique component of the District's culture and connection to mission question.

Restoration within the forest and wetland areas began with the weed eradication and native plantings performed by the general contractor during construction activities. Selected shrubs propagated by students during CREST programs were installed on-site to emphasize the connection between Trillium Creek Primary School and the existing schools, students and CREST in the District. Student restoration in the wetland will be conducted in phases and feature age appropriate activities to support native vegetation growth, reduce the presence of invasive plants, enhance wildlife habitat within the riparian corridor, and improve water quality within Trillium Creek. This work will forge connections between students and community partners involved in larger restoration efforts within the watershed and region.



TREE CANOPY DIAGRAM



# Green Building Design

Students at Trillium Creek Primary School have an opportunity to learn about sustainability through the integrated design process, growing learning communities, the building's green building features and the larger schoolyard. Students and visitors to the site are presented with examples of efficient water use, natural light within the classrooms that promote productive learning spaces, and native plants that compliment the existing site conditions and help to enhance the wetland features that dominate the landscape.

Upon completion, Trillium Creek Primary School will apply to become LEED® certified. The LEED green building certification program is the nationally accepted benchmark for the design, construction, and operation of green buildings. LEED for Schools™ rating system used for certifying K-12 educational facilities. Certification is based on achieving design and construction prerequisites and credits from six credit categories, described to the right. An important component of the LEED for Schools™ rating system is the connection back to student learning. Projects that achieve LEED for Schools™ certification, regardless of the level, have the opportunity to engage students in meaningful studies of their built and natural environments. By understanding the design intent, overall impact, and function of the building, students can enhance their understanding of green building practices in conjunction with supporting curriculum.



## SUSTAINABLE SITES (SS)

This category has requirements around site selection and planning that target previously developed sites and protect prime farmland from development. Site selection and planning is important in reducing impact to wildlife corridors, watersheds and wetlands, and other existing site vegetation and natural features. The sustainable sites category also has credits for alternative transportation, stormwater management and reducing soil erosion potential during construction and occupancy.



## WATER EFFICIENCY (WE)

The water efficiency category considers both outdoor and indoor water use and reduction. These credits focus on reducing the amount of potable water used for irrigation in landscaping by encouraging native and drought tolerant plantings. Innovative designs in water efficiencies, such as harvesting rainwater for non-potable uses, are also encouraged. LEED certified schools must use 20% less water than the baseline through efficient fixtures and other design features.



## ENERGY & ATMOSPHERE (EA)

This category considers the building envelope (windows, doors, insulation, siding), as well as HVAC systems, appliances, equipment, and other connections that building occupants have to the indoor and outdoor environment. Strategies to balance natural ventilation and daylight with mechanical systems are identified in a range of credits within this category.



## MATERIALS & RESOURCES (MR)

Credits and prerequisites in this category relate to the content of materials and strategies to protect resources related to the built environment. Credits in this category reward projects that prioritize sustainable purchasing practices for materials with high percentages of recycled content and that are harvested and manufactured within 500 miles of the project site. Points for diverting high percentages of construction waste can also be achieved in this category.



## INDOOR ENVIRONMENTAL QUALITY (IEQ)

This category includes prerequisites and credits related to indoor air quality strategies, both during construction and occupancy, thermal comfort of occupants and the installation and use of low-emitting materials, such as paints, coatings, carpets, and wood or composite products. This category ensures that the building provides a healthy learning and work environment for all occupants.



## INNOVATION IN DESIGN (ID)

Projects can earn a maximum of six points for this category. These points can be earned through "exemplary performance" of an existing LEED credit, or by integrating innovative features that are not otherwise included in the rating system. Working with a LEED Accredited Professional and using the school as a teaching tool can also earn two points.

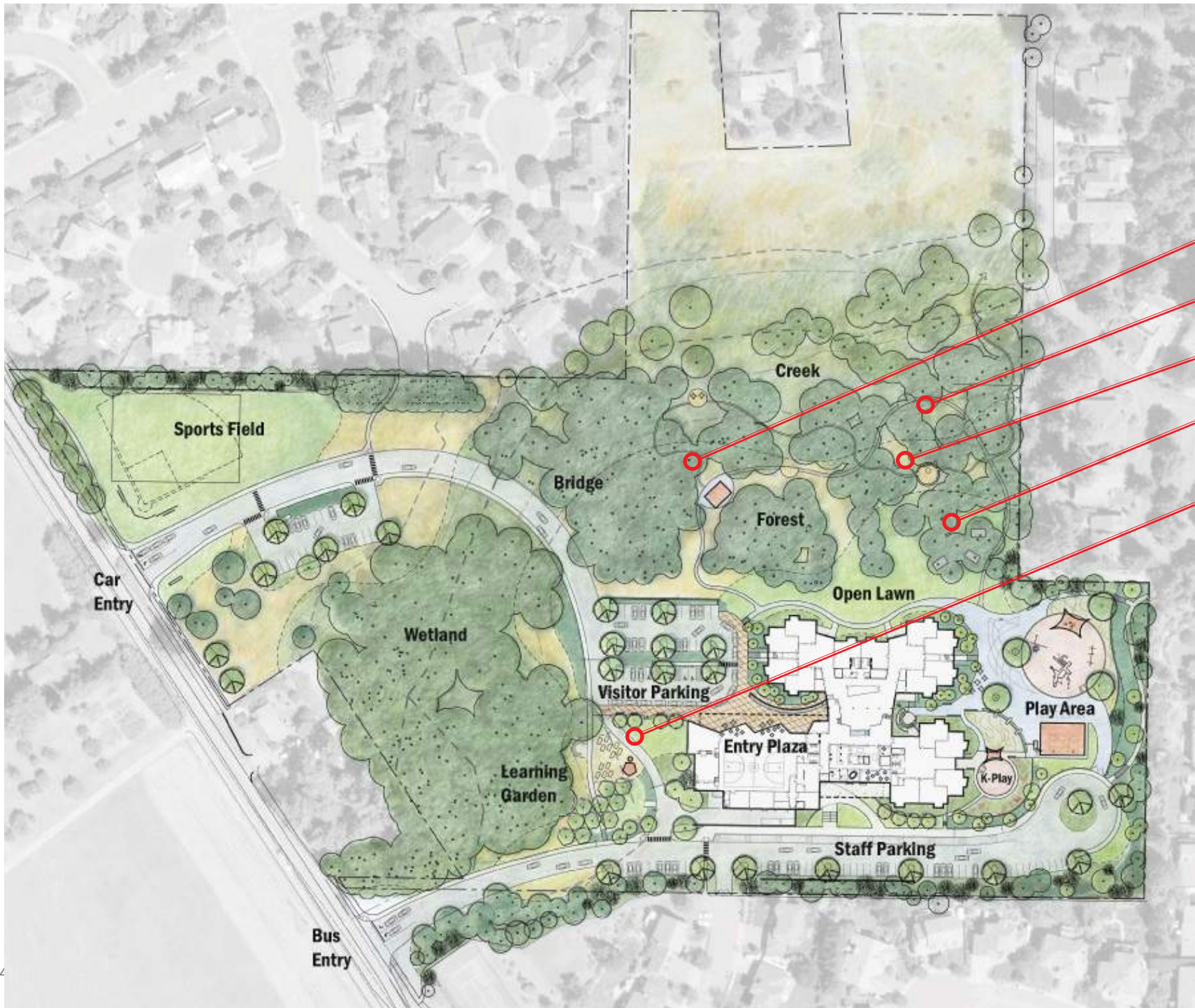








THE FUTURE



# Site Opportunities



OUTDOOR LEARNING  
SHELTER

FOREST LEARNING PATH

STONE COUNCIL RING

TREE FORTS

LEARNING GARDEN WITH  
SITE COMPOSTING AND  
ORCHARD

Several site elements were included in the original design and contemplated throughout the design process, but were envisioned as future improvements and projects for the school after students, teachers and staff fully define its culture. Some of these elements include tree forts in the forest, an outdoor learning shelter, learning gardens, and an interpretive trail system that would wind through the forest and parts of the wetland.

In addition to these elements, there is a great opportunity for future generations of students, parents, teachers, and administrators to enhance these site and building design features, support student learning and continue to tell the story of the Trillium Creek Primary School community.





TRILLIUM CREEK PRIMARY SCHOOL



WEST LINN-WILSONVILLE SCHOOL DISTRICT